A NEW SPECIES OF THE GENUS *AUSTRALOBIUS* CHAMBERLIN, 1920 (LITHOBIOMORPHA: LITHOBIIDAE) FROM TIBET, CHINA[1]

Huiqin Ma,[2,3] Da-Xiang Song,[2,4] and Mingsheng Zhu[2]

This paper is dedicated to the memory of Doctor, Professor Da-Xiang Song, Academician of the Chinese Academy of Sciences, who passed away on January 25, 2008. We thank him for his contributions to zoology, for his generosity to colleagues as well as students, and for his teachings.

ABSTRACT: The present paper describes a new species of the genus *Australobius* Chamberlin, 1920 (Lithobiomorpha: Lithobiidae) recently discovered in Tibet, China. *Australobius anamagnus* from Lhünze County, Shannan City. The cephalic shield, tergites, coxosternum and certain other diagnostic characters of the new species are illustrated.

KEY WORDS: Lithobiidae, *Australobius*, new species, Tibet, China

Australobius Chamberlin, 1920 is a genus of centipedes, distributed chiefly in southeast Asia. The most northerly record is from the border between Assam (India) and Burma. This genus also occurs at the Wallace Line in New Guinea and in northern Queensland (Eason, 1989; 1992). Currently, this genus contains 30 species (Zapparoli, 2006). The lithobiomorph fauna of China is poorly known and this also holds true in Tibet; 57 species and subspecies of lithobiomorph have been described from China (Attems, 1938; 1953; Takakuwa, 1939; 1940; Takakuwa and Takashima, 1949; Chamberlin and Wang, 1952; Wang, 1959; Loksa, 1960; Zalesskaja, 1978; Wang and Mauriès, 1996; Eason, 1997; Chao, 2005; Zapparoli, 2006; Ma et al., 2007), of which only two species has been previously found in China, none in Tibet. Upon examining our collections from Tibet, we came across a new species belonging to the genus *Australobius*, the description of which is given below.

METHODS

All the material was collected by hand or with forceps from under stones. All centipedes examined were preserved in 75% ethanol. Species identifications and drawings of some taxonomically important characters were made with the aid of a Motic-C stereoscope. All material is now preserved in the College of Life Sciences, Hebei University, Baoding, China.

The following abbreviations are used in the text and tables: T, TT – tergite, tergites, S, SS –sternite, sternites, C – coxa, Tr – trochanter, P – prefemur, F – femur, T – tibia, a – anterior, m – median, p – posterior.

[1] Received on June 18, 2007. Accepted on July 13, 2007.

[2] College of Life Sciences, Hebei University, Baoding, Hebei 071002 P.R. China. E-mails: HM, mhq008@yahoo.com; MZ, mingshengzhu@263.net; DS, dxsong2002@yahoo.com.cn (deceased).

[3] Scientific Research Office, Hengshui College, Hengshui, Hebei 053000 P. R. China.

[4] Jiangsu Key Laboratory for Biodiversity and Biotechnology, College of Life Sciences, Nanjing Normal University, Nanjing, Jiangsu 210097, P.R. China.

Mailed on May 14, 2008

SYSTEMATIC ENTOMOLOGY

Chilopoda Latreille, 1817
Lithobiomorpha Pocock, 1895
Lithobiidae Newport, 1844
Australobius Chamberlin, 1920

Australobius anamagnus, new species

Figs. 1–7

Type Data: Holotype: Female (Fig. 1), body length 26.6 mm, cephalic shield length 2.41 mm, breadth 2.62 mm, antennae composed of 26+26 antennomeres, 10 ocelli on each side, 3+3 prosternal teeth, 5676 coxal pores arranged into a irregular row; the first article of the gonopods bearing 3+3 coniform spurs (Fig. 5); 18 moderately long setae on the ventral side of the first article, arranged into four irregular rows, 10 moderately long setae on the ventral side of the second article, arranged in three irregular rows; 5 moderately long setae on the ventral side of the third article, arranged in an irregular row; distal claw broad, simple (Fig. 6), without bulge at base. China, Lhünze County, Shannan City, Tibet, 28°04'N 92°03'E, altitude 4960 m, 8 August 2006, leg. Mingsheng Zhu, Long Liu, Xiaofeng Yang. **Paratypes:** 3 females and 2 males, same data as holotype.

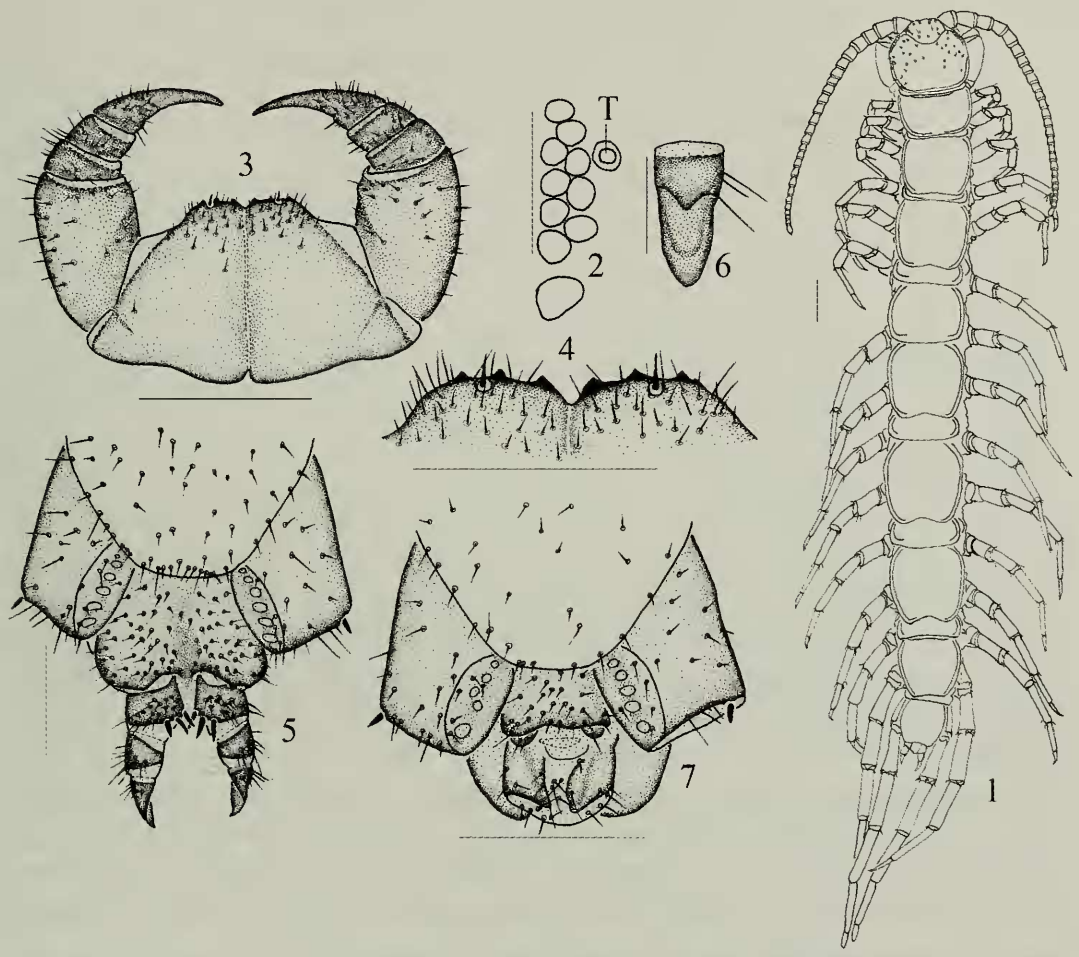
Diagnosis: Maximum length of body (from anterior margin of the cephalic shield to posterior end of telson) up to 26.6 mm, antennae composed of 25+26 or 26+26 antennomeres, 10 ocelli on each side, the last one comparatively large; Tömösváry's organ moderately small, rather smaller than the adjoining ocelli; 3–4 prosternal teeth; porodonts stout and well developed, situated between the two outer teeth; posterior angles of all tergites rounded and without projection; tarsus-metatarsus articulation moderately well-defined on legs 1–13, well-defined on legs 14 and 15; anterior and posterior accessory claws in legs 1–13, no accessory claws on legs 14 and 15; coxal pores 4–9, arranged in a row on the last four pair of legs; female gonopods with 3–4 conical spurs and a simple claw; male gonopods moderately large and stout.

Description: Body length 15.9–26.6 mm, the cephalic shield length 1.72–2.41 mm, breadth 1.79–2.62 mm (based on preserved specimens).

Colour (based on specimens in 75% ethanol): antennae yellow-brown, tergites yellow-brown, the cephalic shield, TT 1, 14 and 15 yellow-brown, the cephalic shield and T 15 darker; yellow from the anterior margin to the clypeus furrow, posterior margin darker; pleural region pale grey to lavender; sternites pale yellow-brown, with slightly reddish hue; distal region of forcipules blackish brown, maxillipeds, coxosternum, S 15, and genital sternite yellow-brown; the last two SS yellow-brown to beige; all legs lightly gray, distitarsus of maxillipeds black; legs 1–13 pale yellow-brown to yellow-brown, with slightly grayish hue; legs 14 and 15 and tarsi of all legs yellow-brown.

Antennae usually composed of 26+26 antennomeres, rarely 25+26; basal antennomere slightly longer than wide, the second markedly longer than wide,

succeeding antennomeres typically longer than wide; terminal antennomere 2.2–3.0 times as long as wide; abundant setae on antennal surface, the density of setae more or less constant.



Figures 1–7. *Australobius anamagnus* new species. 1. Holotype, female, dorsal view, scale 1 mm. 2. Holotype, ocelli and Tömösváry's organ, ventral view, scale 250 µm. 3. Holotype, maxilliped coxosternum, ventral view, scale 500 µm. 4. Holotype, dental margin of maxilliped coxosternum, ventral view, scale 250 µm. 5. Holotype, female, posterior segments and gonopods, ventral view, scale 500 µm. 6. Holotype, female, claw of gonopods, inboard view, scale 250 µm. 7. Paratype, male, posterior segments and gonopods, ventral view, scale 500 µm.

Cephalic shield smooth, posterior region ridged, with close netlike veining; tiny setae inserted in pores scattered very sparsely over the surface; frontal marginal ridge with shallow median furrow; posterior margin of cephalic shield slightly concave; cephalic shield slightly longer than wide; short to moderately long setae, scattered sparsely along its border.

Ten ocelli (Fig. 2) on each side, oval to round, arranged in two irregular rows, the terminal ocellus comparatively larger, near to the ventral comparatively small, other ocelli about equal in size, overhanging lateral margin of head; ocelli moderately domed, translucent.

Tömösváry's organ (Fig. 2-T) moderately small, nearly round, smaller than the adjoining ocelli, and lying on ventral margin of the head immediately ventral to the ocelli; moderately broad sclerotised region around the Tömösváry organ. Maxilliped coxosternite trapezoidal (Fig. 3), dental margin moderately broad, convex, median notch moderately deep, V-shaped; dental margin with 3+3 or 3+4 teeth, one specimen with 4+4 teeth; teeth moderately small and blunt (Fig. 4), roughly triangular, dental margin with an obvious shoulder; porodonts comparatively thick and strong, situated between the outer two teeth, in one specimen they were situated between the second and third; some moderately long setae scattered on the surface of the maxillipede coxosternite, comparatively long and thick setae near the dental margin.

All tergites moderately smooth, unwrinkled, posteriorly slightly ridged; T 1 generally trapeziform, posterolaterally narrower than anterolaterally, slightly wider than T 3 and slightly narrower than the cephalic shield; tiny setae inserted in pores scattered very sparsely over the surface, with a few moderately long setae near the marginal ridge; lateral marginal ridge of all tergites continuous, short setae scattered sparsely along the lateral borders, more densely on the anterior, with 4–6 moderately long setae in the anterior angles, 3–4 moderately long setae in the posterior angles; posterior marginal ridge of T 1 continuous, posterior margin ridge of TT 3, 5, 8, 10, 12, and 14 discontinuous; posterior margin of the TT 1 and 3 slightly concave, posterior margin of TT 5, 8, 10, and 12 deeply concave, T 14 slightly concave; posterior angles of all tergites rounded, without projection.

All sternites more or less trapeziform, moderately smooth, setae scattered very sparsely on the surface, 4–8 comparatively long bristles scattered sparsely on the surface of each sternite, among them a pair of bristles approximately symmetrical; having remarkably dense setae on the surface of the S 14 and S 15; some short to moderately long setae on the posterior margin of each sternite.

Tarsus-metatarsus articulation of legs more or less well-defined on legs 1–13, well-defined on legs 14 and 15; anterior and posterior accessory claws on legs 1–13, anterior accessory claws slender and sharp, forming relatively small angles with the tarsal claws; posterior accessory claws rather more broad and longer than the anterior, forming relatively large angles with the tarsal claws; no accessory claws on the 15th legs; abundant glandular pores on the prefemur, femur, tibia and tarsus of legs 14 and 15; short to moderately long setae sparsely scattered on the surface of legs 1–13; having more setae on the tarsus, some moderately thicker setae among them, thicker setae arranging in a row on the anterior side of tarsus, two rows thick setae on the ventral side of tarsus; both sexes having fewer setae on legs 14 and 15, without thick setae on the tarsus; legs 14 and 15 moderately longer than anterior legs in both sexes, metatarsus 67%–79% length of tarsus of legs 15, tarsus 6.2–6.6 times as long as wide of legs 15 in female; metatarsus 75%–77% length of tarsus of legs 15, tarsus 6.3–8.5 times as long as wide of legs 15 in male; legs spinulation in Table 1 (letters out brackets indicate the spinulation of the type female).

Coxal pores slightly ovate to round, size of coxal pores variable; 4–9 coxal pores arranged into an irregular row, 5676, 5777, 6776, 6787, 6797 in females, 6785, 6775, 4565, 5665 in males in the specimens examined; coxal pore field set in a shallow groove, the edge of the coxal pore field with weakly apophysis, bearing short to moderately long setae.

Female S 15 almost trapezoidal, posterior angles rounded, straight or slightly concave posteromedially, approximately semicircular; long and slender setae scattered sparsely over the surface and lateral edge of the S 15; sternite of the genital segment slightly wider than long, usually well sclerotised, posterior margin concave between the condyles of the gonopods except for a small median approximately quadrangular bulge, terminal of bulge lightly sclerotised; setae evenly and moderately densely scattered on the sternite of the genital segment, comparatively sparse adjacent to the S 15; gonopods divided into three articles, the first bearing 3+4, 3+3 (one specimen 4+4) moderately small, coniform spurs (Fig. 5), inner spur very much smaller than the outer; about 18–20 moderately long setae on the ventral side of the first article, arranged into four irregular rows, 10–12 moderately long setae on the ventral side of the second article, arranged in three irregular rows; 5–6 moderately long setae on the ventral side of the third article, arranged in an irregular row, without setae and bristles on all dorsal articles of the gonopods; distal claw broad, simple (Fig. 6), without bulge at base.

Male S 15 straight posteromedially, both posterior angles rounded, posterior margin semicircular, commonly yellow-brown; long and slender setae scattered sparsely over the surface and lateral edges of the S 15; sternite of genital segment moderately smaller than in the female, wider than long, usually well sclerotised; lateral and posteromedian sides sloping backwards, medial hunched; long slender setae scattered sparsely over the surface of the sternite of the genital segment, a regular fringe of longer setae along the posterior margin; posterior margin superficially concave between the condyles of the gonopods, without a medial bulge; gonopods are seen as only a small hemispherical protuberance, with a single long seta, the distal region slightly sclerotised (Fig. 7).

Etymology: The specific name refers to the characteristic of the type specimen resembles *A. magnus* (Trotzina, 1894).

Habitat: The type series was collected in mixed coniferous-broad leaved forest of low mountainside.

Distribution: Tibet, Shannan City.

Remarks: The new species resembles *A. magnus* (Trotzina, 1894), but can be easily distinguished from the latter by the different Legs spinulation; T 14 slightly concave rather than deeply concave in the latter; a protuberance on the terminal of the tibia of legs 15 in male, whereas it is normal in *A. magnus*; there are abundant setae in SS 14 and 15 instead of normal in *A. magnus*.

Key to Chinese species of the genus *Australobius* Chamberlin, 1920

To assist in the identification of species described in this work and other recorded Chinese species of *Australobius*, the following key is offered. This key emphasizes characters that can be examined without much dissection or high-magnification microscopy.

1. Having remarkable dense setae on the surface of the S 14 and S 15 2
   No remarkable dense setae on the surface of the S 14 and S 15 .....
   .....*Australobius anamagnus* new species

2. Four ocelli on each side, Tömösváry's organ larger than the adjoining ocelli
   .....*A. tetrophthalmus* (Loksa, 1960)
   Eight to ten ocelli on each side, Tömösváry's organ smaller than the adjoining ocelli .....*A. magnus* (Trozina, 1894)

Table 1. Legs spinulation of *Australobius anamagnus* new species

Legs	ventral					dorsal				
	C	Tr	P	F	T	C	Tr	P	F	T
1			mp	amp	amp			mp	amp	a
2			mp	amp	amp			mp	amp	a(p)
3			mp	amp	amp			mp	amp	ap
4-10			mp	amp	amp			amp	ap	ap
11			mp	amp	amp			amp	ap	ap
12			amp	amp	amp	(a)		amp	ap	ap
13			amp	amp	amp	a		amp	ap	ap
14	a	m	amp	amp	am	a		amp	p	p
15	a	m	amp	amp	a	a		amp	p	

NB: Letters in brackets indicate variable spines.

ACKNOWLEDGEMENTS

This study was supported by the Key Project of the National Natural Science Foundation of China (NSFC Key Project-30630010). We are grateful to Dr. Gregory D. Edgecombe, Principal Research Scientist on Myriapoda of the Australian Museum, Sydney, Australia, and Dr. Pavel Stoev, Curator of Myriapoda of the National Museum of Natural History in Sofia (Bulgaria) for their hospitality, everlasting help during our research, as well as advice and comments on the manuscript, respectively. We thank Professor Alessandro Minelli, whose suggestions improved the manuscript. We wish also to thank Professor Marzio Zapparoli, Department of Plant Protection, University of Tuscia, Viterbo (Italy), Dr. Rowland M. Shelley, curator of Terrestrial Invertebrates of North Carolina Museum of Natural Sciences, Raleigh, North Carolina (USA), and Dr. His-Te Shih, Assistant Professor of Department of Life Science, National Chung-Hsing University, Taichung (China), for providing us with invaluable literature. Thanks must go to Dr. Zi-Zhong Yang and Dr. Zhi-Sheng Zhang for their help in preparing the paper.

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